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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,399	03/05/2001	Christian Sven Collberg	1968NP/C5033	7812
7590 Joseph A Sawyer Jr Sawyer & Associates PO Box 51418 Palo Alto, CA 94303		11/01/2007	EXAMINER WINTER, JOHN M	
			ART UNIT 3621	PAPER NUMBER
			MAIL DATE 11/01/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

09/719,399

**Applicant(s)**

COLLBERG ET AL.

**Examiner**

John M. Winter

**Art Unit**

3621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 30-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28, 30-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Acknowledgements*

The Applicants amendment filed on July 30, 2007 is acknowledged, 1-28 and 30-54 remain pending .

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-28, 30-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moskowitz et al. (US Patent 5,745,569) in view of Shur (US Patent 6,330,672).

As per claim 1,

Moskowitz et al. ('569) discloses a computerized method of watermarking a software object comprising the steps of:

determining an input sequence; (Column 5, line 65 – column 6, line 8 [license corresponds to input sequence] )

storing the a watermark in the state of the software object so that the watermark becomes detectable by a computerized recognizer which examines the state of the software object when the software is being run with the input sequence (column 6, lines 9-54 )

Moskowitz et al. ('569) does not explicitly disclose determining a watermark. Shur

('672)discloses determining a watermark (Abstract). It would be obvious to one having ordinary skill in the art at the time of the invention to combine Moskowitz et al. ('569) method with Shur ('672)'s teaching in order to determine whether the content is original or pirated.

As per claim 2,

Moskowitz et al. ('569)discloses the method as claimed in claim 1 wherein the software object is a program or a piece of a program. (Abstract)

As per claim 3,

Moskowitz et al. ('569) discloses the method as claimed in claim 1, wherein the watermark is detectable in the state of the software object formed by the current values held in at least one of:

(a) at least one stack; (b) at least one heap; (c) at least one data register; and (d) at least one global variable; of the software object. (Column 6, lines 18-20)

As per claim 4,

Moskowitz et al. ('569) discloses the method OF claim 1 or 2 or 3 wherein the watermark is stored in an execution state of the software object whereby the input sequence is constructed which, when fed to an application of which the software object is a part, will make the software object enter a second state which is a representation of the watermark, the representation being validated or checked by examining the execution state of the

software object. (column 6, lines 9-54 )

As per claim 5,

Moskowitz et al. ('569) discloses the method as claimed in claim 1,

wherein the watermark is embedded in an execution trace of the software object whereby, as a special input is fed to the software object, an address/operator trace is monitored and, based on a property of the trace, the watermark is extracted. (column 6, lines 9-54 )

As per claim 6,

Moskowitz et al. (' 569)discloses the method of claim 1,

Moskowitz et al. (' 569) does not specifically disclose "the watermark is embedded in a topology of a dynamically built graph structure"

Official Notice is taken that "the watermark is embedded in a topology of a dynamically built graph structure" is common and well known in prior art in reference to computer programs. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the watermark is embedded in the topology of a dynamically built graph structure because this is a fundamental representation of a watermark.

As per claim 7,

Moskowitz et al. ('569) discloses the method as claimed in claim 6,

Wherein the dynamically built graph structure is detectable in a data structure of the program column 6, lines 9-54 )

As per claim 8,  
Moskowitz et al. ('569) discloses the method of claim 1,  
further comprising the step of building a computerized recognizer concurrently with the input sequence and the watermark. (Column 6, lines 9-32)

As per claim 9,  
Moskowitz et al. ('569) discloses the method of claim 8  
herein the computerized recognizer is a function adapted to identify and extract the watermark from all other dynamic structures on a heap or stack.(Column 6, lines 9-32)  
The Examiner notes that as written the term "all other dynamic structures on a heap or stack" comprises the entire program, as it is being run, even if data is read from a hard drive (such as a registration key) it will be stored in an allocated memory position in the heap or the stack.

As per claim 10,  
Moskowitz et al. ('569) discloses the method of claim 8  
wherein the watermark incorporates a marker that will allow the computerized recognizer to recognize it easily.(Column 6, lines 38-56)

As per claim 11,  
  
Moskowitz et al. ('569) discloses the method of claim 8  
  
the recognizer is retained separately from the program and whereby the recognizer  
inspects the state of the program(Column 6, lines 9-32)

As per claim 12,  
  
Moskowitz et al. ('569) discloses the method of claim 8  
  
Official Notice is taken that "wherein the computerized recognizer is dynamically linked  
with the program when it is checked for the existence of a watermark" is common and well  
known in prior art in reference to operating systems. It would have been obvious to one having  
ordinary skill in the art at the time the invention was made that the computerized recognizer is  
dynamically linked with the program when it is checked for the existence of a watermark in  
order to utilize memory more efficiently. The Examiner notes that it is common in many  
operating systems to dynamically link and unlink modules (libraries, drivers etc..) from the OS  
kernel to conserve the amount of memory used by the kernel.

As per claim 13,  
  
Moskowitz et al. ('569) discloses the method of claim 1  
  
the software object is a part of an application that is obfuscated or incorporates tamper-  
proofing code (Abstract)

As per claim 14,

Moskowitz et al. (' 569) discloses the method of claim 8,

wherein the computerized recognizer checks the watermark for a signature property.

(Column 6, lines 38-56)

As per claim 15,

Moskowitz et al. ('569) discloses the method of claim 14

Official Notice is taken that "the signature property is evaluated by testing for a specific result from a hard computational problem." is common and well known in prior art in reference to digital security. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the signature property is evaluated by testing for a specific result from a hard computational problem in order to make signature non trivial to crack. The Examiner notes that this feature is common to public key encryption (i.e. RSA).

As per claim 16,

Moskowitz et al. ('569) discloses the method of claim 14 including the step of creating a number having at least one numeric property which is embedded in the topology of the watermark whereby the signature property is evaluated by testing the at least one or more numeric property.(Column 6, lines 38-56)

As per claim 17

Moskowitz et al. (' 569) discloses the method of claim 16



Official Notice is taken that "the signature property is evaluated by testing whether the number is a product of two primes" is common and well known in prior art in reference to digital security. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the signature property is evaluated by testing whether  $n$  is the product of two primes in order to make signature non trivial to crack. The Examiner notes that this feature is common to public key encryption (i.e. RSA).

Claims 18-28, 30-54 are in parallel with claims 1-17, these claims contain the same limitations as claims 1-17 and are rejected for at least the same reasons.

#### ***Response to Arguments***

The Applicants arguments filed on July 30, 2007 have been fully considered.

The amended claims are rejected in view of newly discovered references Moskowitz et al. (US Patent 5,745,569) in view of Shur (US Patent 6,330,672).

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Winter whose telephone number is (571) 272-6713. The examiner can normally be reached on M-F 8:30-6, 1st Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Fischer can be reached on (571) 272-6779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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John Winter

Patent Examiner -- 3621



ANDREW J. FISCHER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600